Recovery Kernel

# IPHROGRAMA LOKUNOOKA: IMETHAMPHETAMINE

*Ukubanga, Isikhathi, kanye Nenja Yokubuyela kuSistemu Esisebenza YeDopamine*

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Lolu hhayi isihloko esithi i-Recovery Kernel ekhomba ukusihlola ngokuphuma kwemethamphetamine—isakhiwo sezimpilo, ukuhambisana kwezinye izici zokugqoka, uhlobo lokusebenzisa, protokoli yokubuyela emangalweni, kanye ne-map epotokoli eliphelele—elilungisiwe ukuze lihlale kuyo ukuthi yini ukusihlola kwemethamphetamine. Akuyona inkinga yokuhamba njengoba kuphuma kwebenzodiazepine. Kuyona, ngamagama ka-Recovery Kernel, 'eziyisizathu esingasibekelekela emhlabathini' umuntu angazihlala kuyo, futhi linemininga yokuqamba eyinhloko: ukuhamba kuza nokubanga kokungabaza okunzulu kanye ne-anhedonia elinzima kuye kwanele kube yindawo yokuziphathisela isizotha. Lolu hlinyelelo luchaziwa lokuthi luthatha inkinga leyo ngendlela efanayo elo mbhalo webenzo ukhomba ukuyishilo.

## Ibhizinisi lesi-0 — Ukuphepha Okusheshayo: Ifunda Lokhu Kuqala

**⚠ ISIQINISEKISO**

Ukuhamba kweMethamphetamine akukuhlala ukufa ngokuphuka njengoba kungase kwenzeke ekuhamba kwebenzodiazepine noma komuthi we-alcohol. Kodwa lo mguza ongemuva kokusebenzisa okuningi noma okude kakhulu unza isimo esinamandla emoyeni empi empi yemfundo yokugxila, futhi ukungcola okuqukethwe kuyindawo engabonakali yokuzisola. Chaza lo mguza njengoba ukhuluma ngokuphuka okuhle noma okuthile lapha kwi-library.

### *Thola usizo lokuphazamiseka ngokushesha uma uhlupheka:*

- Uma ukhombisa imiqondo yokuzisola noma ukuziphazamisa, noma uzizwa ukuthi inhliziyo yakho iqhakazile kakhulu kunokubhekana nayo — yocela noma ubhale ku-0800 567 567, noma ubhale HOME ku-741741, yonke imuva 24/7
- Ukukhuleka kwemizwa yomthwalo, ukuhlala isinyathelo somhlaba, ukushisa komoya, umbala omkhulu wezinyembezi, noma ukungaqondishi kwebhasi/ukulahlekelwa komlomo — lokhu kungabonisa isimo esihlobene ne-cardiac event noma stroke, konke yizimfihlo eziqinile ngemuva kokusebenzisa izinto eziningi zokukhuthaza, futhi kudinga ukubiza i-112 ngokushesha
- Izimfihlo zokwesaba, ukubona okungabonakali, noma ukungakwazi ukuhlukanisa lokuthile okuyiqiniso—ukuziphazamiseka okusingeniseka ngoba

imethi kungakhomba izinsuku eziningi kuze kube wewe emakhawunti futhi kudinga ukuhlola ngokwempilo

- Ukuzokhathazeka okukhulu noma ukuzwa kokulahlekelwa ukulawula imiqondo yakho

**SANCTUARY**

Ukubanga kwalo luhlungu—ukungaphakathi okukhulu, ukulala okuningi, ukula okukhulu, kanye nokuphazamisa komoya—kuyindaba ekulindelekayo futhi akusiyo, ngokwakho, inkinga yempilo. Kuyilamasiko eliqala ukubuyisela umzimba. Into ebalulekile ukuthi iyona eyikezayo iyeyo eyayigama kuyo isihloko sika-SSRI: umoya kanye nokuphepha, hhayi ukungaqondisiwa. Uma unomuzwa wokungazi, khuluma nabantu.

# Ikhadi 1 — Kungani Lolu Mbhalo LikuMasiko

I-guide yeRecovery Kernel isithi lokhu ngobuhle: 'akukho okuhamba kakade. Inqondo yakho iqhubeka nokulungiswa. Ubuhlungu yisigqi sokuthi ukulungisa kuqala.' Lokwenkanye elithi liletha umbono wokubambela yonke le ndlela yokusihlonipha. Ukuhamba kuka-meth akunamandlo anokuthwala noma isitayela esiqondisiwe njengoba yenza i-benzodiazepines noma i-opioids — akukho isilinganiso se-cross-taper lapha. Okukhona ngakwesikhundla ukuthi kuyindlela yobuhlakani, eyaziwa kahle futhi ebonakalayo yokuziphilisa, kanye nokwazi lelo sikhathi esizayo ngokwakho lona yisizathu sokulungiswa: lokhu kuguqula phakathi kwe-'lo bhlungu kusho ukuthi ngidinga i-meth kangcono ukuze ukuzwa noma njengendlela ejwayelekile' kanye 'lobunzima lokuthi yiwusuku lwa-3 lokuqala kwindlela eyaziwa ukuthi iyasiphelisa.'

### *Umbhalo Omuqondisiwe: Ukuthola Indlela Yokungcola*

I-methamphetamine yashizwa kuqala e-ephedrine ngo-1893 uchemisti waJapan uNagai Nagayoshi, futhi yashazwa ngendlela engakubonakalisi noma manje ngo-1919 nguAkira Ogata. Yasetshenziswa futhi isithengiswe eJapan ngo-1920s ngibilingisho elithi Philopon, esithengiselwa ukulambela, i-narcolepsy, kanye nokulahleka kwemibala — iphindo yopharamasi noma yiziphiwo zokuthi zingahamba kahle, kodwa ayazange kuzaziwa ukuthi yimbi.

Lokhu lwandiswa ngokuphakama kwalo emweni yomlilo wezwe lwase-II. Ababhokisi beJerika eTemmler bahlukanisa i-methamphetamine yabo ngokwazo ngo-1937, futhi kuya ku-1938 yayisethakashelwa ngaphakathi kwezindawo ngibilingisho elithi Pervitin — libatsheliswa kubathuku beWehrmacht ngezinga elikhulu (izibalo zithinta izilimini zokudala) ngokukhethekile ukuqinisa isivinini sokulala, sokuhamba okungahleli kwesihlangu se-Blitzkrieg, kanye nabesemsebenzi ezindaweni zabantu abasebenzayo ukugcina imisebenzi emide. uJapani wahlukanisa iprogrami efanayo, enika i-methamphetamine kubathuku bekamikaze kanye nabesemsebenzi ezindaweni zabantu abasebenzayo ngoba into efana: yayivumela abantu abalungele ukuba benze umsebenzi ngaphezu kwendlela izilwane zazo zingabathola ngaphandle kwalezi zinto.

**I-Centurion**

Lokhu kukuphawula kwendlela yokuqala yombhalo onikezwa esigaba 5 seliqhbayi—ukusebenzisa umstimulant ukuze kuqondwe ukuhamba komsebenzi ongasimile. Kwakuyiqiniso kubamaqhawe abathukuthele futhi abasebenza emakethe ngonyaka ka-1940, futhi kuyiqiniso kwendlela efanayo namuhla.

Inhliziyo yomthwalo wawo yaba yingakwenziwa emva kwesimo. IJapan ikhethe ngokukhethekile isefayo esikhulu somdaka emva kwezigameko zamafupho lapho izimpendulo zezemeli zomlwadi zihlangana namakethe omuntu siwo — ngokubhekisela kwabanye, inani elibalulekile lomphakathi lalisetshenziswa kabi leli pharimethi ngizinyaka ezimbalwa emva kokuphela kwawo. Ukungqamuka kwezingozi zokuphazamiseka, ukuziphazamiseka kwengqondo, kanye nokubambeka komzimba okwakukwenza yaba yinkungu kakhulu lapho iJapan ihlanganisa Umthetho Wokulawula Izinto Zokukhuthaza ngo-1951, omunye wezimalekelo zizivame ukuhlonishwa ezindaweni zazo zokuqala zesimo sezinto zokukhuthaza emmasweni — impendulo yomthetho ngqo kwakho okuboniswa ngokuthi ukufika kwalo kungaba namandla kakhulu. Yini eyathatha inkinga yomhlaba futhi isibanga esikhulu sasekhaya sokusetshenziswa ngeminyaka engama-1940, ngokwezinto ezincane, yisifundo esifanayo esikudingeka kule ndlela leli sigayudi lisebhekisele ukufundisa: amandla alethu lakho lokubanga ubuhlungu ligcizelela ngendlela umzimba ucela ukusebenza ngalo ngaphandle kokuzola.

# Ibhisekelo 2 — Isikhathi Sokuhamba Kancane

| Isikhathi | Yini Ekuphathweni Ngokubili? | Lokho Okumazwa | Yini okufanele ukwenziwa |
|---|---|---|---|
| Izimpihlo ezi-0–24 (Ukudlula) | Izikweletu zika-dopamine zihlukile; ukusinyana kwe-receptor kuqhuma | Ukungaphakathi okukhulu, ukulala kakhulu, ukula okukhulu, ukuphoba, ukukhathazeka | Ukulala. Ukandla. Ukunaka. Ungalwa ukudlula – lokuyisimilo esiqala ukubuyela phakathi. Izilethi. |
| Izinsuku ezingu-1–5 (Ibhokisi) | Idopamine emkhawulweni; iziqondiso ze-D2 sizaphansi kancane; uhlelo luyamasiko, ngisho nokuthi, likakhala ngokuthize ngekemikali elisithathela kuwo | Ukuguga okubi, ukungakwazi ukuzwa injabulo (anhedonia), ukulambela okukhulu, ukudlahlakala okunamandla, ukulala okungaqondile, ukucindezeleka kwengqondo | Lokhu kuguqula ukuthi kuyindawo yokubuyela okukhulu kunokuba yindiza yokuzisola kule ndlela yonke. Ungalaphangi uma kungahlungile. Thumela i-0800 567 567 uma kukhona ingozi. Qala ukusekelwa kwezinto zokunakekela zeTier 1 (Ibhiseki 8). |
| Izinsuku ezingu-5–14 | Izimpawu ezizivuthayo ziqhubeka zixazulula; | Ukungaqondi okuqhubekayo, | Qala imdlalo omncane —lokhu kuyisigqi |

| Isikhathi | Yini Ekuphathweni Ngokubili? | Lokho Okumazwa | Yini okufanele ukwenziwa |
|---|---|---|---|
| (Ibhakade) | isisindo se-dopamine sibe yindawo esingaphakathi kakhulu; ukubuyela kwe-receptor kusale nje kuqala | ukunomoya ophansi, ukulala okungaphakathi, ukungaqondileka, ukuthanda okuhamba-hamba | sokulungisa (Ibhizinisi 3). Qala ukuchaza nokulwa nezinto zokusebenzisa ezivela emhlabathini. |
| Izinyanga 2–4 (Ukubuyela Okusheshayo) | Ukutholakala kwama-D2 receptors kusekuqaleni kokubona ukophawula; ukwakha kwa-dopamine kuphakama kancane; ukudokotukwa kwe-prefrontal cortex kuqala | Ukuthuthukiswa kwemizwa okungaqondile; ukukhululeka komoya wokucabanga; ukuthi ukufuna kuye kuba yizinyathelo kunokuba konke isikhathi; ukuhlala kwezinyembezi | Khomba ukwakha uhlelo oluqhubekayo lokuphila. Izinjalo zokuziphatha eziyisizathu zokuqala zibe yizinto ezivumelekile lapha, hhayi ngaphambi kwalesi sikhathi. |
| Izinyanga 1–3 | Ukuthola i-D2 receptor emsululekile; ukubuywa kwemvelo yomzimba wezinto ezimangalisiwe ekhonza lapho kukhona umqondo; ukuzilungiselela kwe-dopamine. | Ukuthuthuka okungenayo nokuphazamiseka kwemizwa kanye nokushintsha kwezimo zempilo; izimpheni zokuhamba emva kokubambeka okuqhubekayo (PAWS) zingenzeka | Umsebenzi wokubuyisela ubuzwe ube yomthwalo lapha —angikho ngaphambilini. Lokhu kusekuqaleni lapho amandla anqoba ngokwenzo. |
| Izinyanga e-3 ku-12 | Ukuthuka kwemiphumela emikhulu; ukubuyiswa kwezinyembezi zokuziphila ezithlwelwe ngendlela yokudlulisela i-BDNF; umsebenzi we-prefrontal cortex ubuyisiwe kakhulu | Isimo somoya esiqhangayo kubantu abaningi; ukuthishwa kwemithukuthelo kukhona ngokuthi kuqondiswa yizinto noma izimpendulo kunokuba yenzeka ngokuzitholwa; umsebenzi womqondo ubuye ekubekeni; ukujabula okungenayo empilweni kuba yikwenzeka | Phatha zonke izindlela ezilandelayo. Ilawo lolu hloniphekile ukulwa nezikhathi zokucindezeleka ezinkulu lapho kuwanemowesha — isisindo siqala ukubakeka, asikufanele esingaphakathi ngokugcwele. |

# Ibhizinisi lesi-3 — Ngabe Kuyangibanisa Kanjani Umnotho Womqobo?

Lokhu kukuphathelene nombuzo ongaphezu kwesigaba sethu sonke sesikhathi esingaphakathi, futhi kufanele likwelele impendulo eqondile kunokuba yisizotha

esingaqondile. Impendulo enesiqalo inehlobo elibalulekile: ukungcola okukhulu kuphumelela namakhulu, kodwa ukuthola ubuhle okuphelele ngesimo se-receptor kudinga isikhathi esiningi—futhi ukuqonda inani lokuqiniso lushintsha lokuthi "okujwayelekile" kufanele likuzizwa kanjani kuwo lonke isigaba.

### I-Centurion

Ikhlu elithize lezinye zindaba, elichazwa ngqo kusuka emfundweni yokubhucukela imifanekiso yomzimba eyokuthi iRecovery Kernel ihamba kuyo (Volkow et al.): ukubuyela kwama-dopamine D2 receptor emva kokuphepha kwemethamphetamine kuyasheshisa, kodwa ukubuyela okukhulu kudinga iminyaka engu-12 kuya ku-17 yokungaphazeki. Lokhu kusheshisa kakhulu kunokumpiyako (ukuthuthuka kwama-D2 receptor okusheshisa ngo-1, ngemicimbi kaHeinz et al.) noma i-cocaine — methamphetamine inza izinyuka zama-dopamine eziningi kakhulu phakathi kwezinto eziqhakazayo ezivamile, futhi isikhathi sokuqondisa sibe yikho.

Ngaphakathi kwesikhathi esikhulu sika-12-17 iminyaka, kukhona ikhwelo lokubuyela phansi elisheshayo, eliqondile elibalulekile ukulazi: izinsuku ezi-90. Isakhiwo se-neuroplasticity se-Recovery Kernel siveliwa lokhu ngokucacile — izinsuku ezi-31 kuya ku-60 yizikhathi lapho izindlela ezintsha zokunqanda ziqala ukukhiqizwa futhi lezo zamadambe ziyaphuma; izinsuku ezi-61 kuya ku-90 yizikhathi lapho lezi zindlela ezintsha ziqala ukubambeka zibe yinto engakubonakalisa ngokwakhiwo. Kuze kube yizinsuku ezingu-90, ngemisebenzi yokulalela, ukulala, kanye nezinto zinganye zokuzinza kwe-neuroplasticity esigabeni 8 lapha, inani lezindima ze-dopamine liphakeme kakhulu, ukungqa kwamanzi ama-gray matter kuphakama ngokubonakalisa, futhi izidingo ziyaphazamiseka kabi kubantu abaningi — nakuba ukuthula kwezinyanga ezi-12-17 kuqhubeka ngaphansi kwakho.

| Isinyathelo Sokubuyela Phakathi | Isikhathi Esingenzeka |
|---|---|
| Ukungcola okukhulu kuphuma | Izinsuku ezingu-1–5 |
| Ukuthanda kuseguphazweni kusuka kube khona njalo kuya kuba yaphakathi/kusetshenziswa ngizwi (cue-triggered) | Izonto 2–4 |
| Ukuthola i-D2 receptor elilindelekile lokubuyela ku-imaging | Izinyanga 2–4 kuyaPhakathi kweMbaoqo 1 |
| Ibhokisi le-neuroplasticity ye-90 iminyaka iqala ukugcina — uhlelo lwamaqoqo amasha luhlanganiswe ngokusekelwe emkhakheni. | Usuku lesishiyagalombili |
| Izingalo zokuzola kanye nokucabanga kubantu abaningi | Izinyanga e-3 kuya kwe-12 |
| Ukutholakala okukhulu kwe-D2 receptor (inombolo ehlejisi) | Iminyaka engama-12 kuya kweye-17 |

### UKUZWA

Uma usekuphi ngo-month 4 futhi usazama izinsuku eziluhlaza, lokhu akusibonakaliso sokuthi inqubo isiphumelele noma ukuthi unyakazekile ngendlela ethile yokuthi i-timeline ayikubhekisele. Ngokubhekisela amakthwele aphezulu, usihlala phakathi kwesistimu esiqhubeka nokuthulela — 'kuyiqiniso yokuqala' ngo-months 3-12 kusho

ngokuthi: eduze, akusifikiwe. I-finish line ye-deepest layer yale ndlela yokuqondisa iyasuka kuya kwi-year and a half kunokuba isizini. Lokhu akusibonakaliso sokuzisola. Kuyisibonakaliso esiqondile, futhi kusho ukuthi izinsuku eziluhlaza ozazihlala kuzithola ziyizelwa, akusibonakaliso sokushaya.

### *Isiqalo Esingaqondile: Lezi Zikhathi Zihlanganisa Ukungakwazi Ukuhamba Ngokuzinikela Okujwayelekile*

Wonke nombolo kulo mkhawukhwini—izimbala zamafunduzi, izimali, inani elikhulu lesimanje sezimali ze-12-17 months—lalimashukaniswa ngabantu abaphuma ku-methamphetamine futhi bahlala lapho. Ngempeleni, ukubophelela okuningi akubonaki kanjani lokho. Izinguquko ezimbili ziyatholakala kanele ukuthi zizifakwe ngokukhethekile, ngoba konke kuhlangana nezindlela zokulungisa eziyochazwa ku mkhawukhwini lo, futhi konke kunzima ukuzivocavoca okusho ukuthi kuyasihlosa isikhathi kunokuba yindawo yokuhamba engalona.

| **Ibhizinisi** | **Okuthi kuyenza kanjani umkhawulo wokubuyela impilo** | **Iqiniso Lokuthi Lizokwenza Kanjani Ku-Timeline** |
|---|---|---|
| Ikhofiini (esisetshenziswa ukulawula imiqondo yobuhlungu kanye nokungathandeki emhlabathini 2) | I-kofeini ayibuyisisi i-dopamine njengoba yenza i-methamphetamine, ngakho-ke akusiyo 'into efanayo emincane.' Kodwa inkhuthaza i-HPA axis — ikwenza kube nokusebenza kwe-cortisol kuphakathi kwesigaba esithile, ngokwesigaba 6, esingase sibe senamandla (ikakhulukazi kubantu abanombala weMet/Met 'Worrier') — kanye nokusebenzisa i-kofeini kabi noma ngemuva kwesikhathi sinokungena okusheshayo kuphazamisa ukuphonononga nendlela yokulala. Isigaba 8, iTisi 3 siqinisekisa ukuthi ukulala yisikhathi sokuzimela kwe-BDNF kanye nokuqondiswa kwe-dopamine system. | Kuwathatha isikhathi esininguqulo ngokungahloniphiwa, ngokubambela ubuhle bokulala okuthi umsebenzi wokuqondisa ukuthwala kusebenza kuqondile, kunokuba ngendlela yezimkhawulo zedopamine. Kuningi okusetshenziswa njengendlela yokugcina amandla lapho kusetshenziswa ngokukhethekile ukuphatha ukungaphakathi Okusekhanda 2 chaza, kunokuba kuqhuba inqubo eqondile yalezo zinyembezi. |
| Izi-alukothi (izisetshenziswa ukuze uyekelele) | Lokhu kukhathazekayo okungaphakathi kwemibono emibili. Umanzi okuphuza uyasusa ukulala, kodwa ukhulisa i-REM sleep — futhi i-REM, ngokwesakhiwo salesi sithombo, iyigama eliqondile lezikhathi zokulala lapho 'ukwenziwa | Kuwenzeka ngokuthi kungawaphindisa umsebenzi wokuhamba ngokushesha, ngenxa yokulimala kwe-REM sleep, futhi kuqondisha inkinga yesibili leyo |

| Ibhizinisi | Okuthi kuyenza kanjani umkhawulo wokubuyela impilo | Iqiniso Lokuthi Lizokwenza Kanjani Ku-Timeline |
|---|---|---|
| | kwememori yezimo namandla okusebenza kwe-dopamine' kuqhubeka khona. Ukusebenzisa umanzi okuphuza ukuqinisekisa ukuthi uzokulala ngenkathi ususa isikhathi sokulala esiqondile kakhulu, siqondisiwe ngokuphazamiseka kwalo (ukungakwazi ukulala) kodwa siphazamisa okungabonakali (ukulala okufanele kuqinisekisa i-dopamine system akusenzekanga). | mahluko ayesihlanganiswe ngezigaba zombhalo elilawumayo: ukuthola ukuzinzela okusha phezu kwaleyo eyayizivikela — kuyenzeka ngempela kubantu abanombala we-DRD2 A1 allele / i-Reward Deficiency Syndrome profile esigabeni 6, lapho umqondo wokubonga usungaphakathi ukuzinzela kakhulu kuphi na into evaqile futhi ivame ukuphakama. |

**⚠ ISIMEMBE**

Kabiwo lapha ukuthi lezi zikhiye zingahlukaniswa njengokungaphumeleli kwezimo zomoya — ukuthola i-caffeine noma umuthi ukuze kuphumelela isikhathi esingakwamukelwa kuyimpendulo ejwayelekile kakhulu kubuhlungu bangempela. Kodwa inguqulo yiqiniso yalo mqondo kufanele isho ngobucacile: lapho, akonawo okuthile okungcolisayo okwenza umbhaco wokuthi usuka kuphi ukuya kuphi esigabeni sesigaba esingaphakathi. Umalo ukulala kuyinkinga, izixazululo ezingumuthi ezikhiye ngasekuhlalweni 8 nge-Tier 3 (melatonin, magnesium glycinate, glycine, isikhathi esiqhubekayo) ziyasebenza nendlela yokuqondisa ukuphinda kunokuthi zibambelele kuyo.

### *Ukubambeka: Kungani "Isuku Eliyonyaka, Lapho Ngizoba Ngihle" Akukuhle Kakhulu*

Kukhona umqondo odinga ukubhekwa ngqo, ngoba uyisiphetho esibukeka singcono elivela ezibalo zikaSection 3 ngokwazo, futhi akulona luhlaza kakhulu—okuyinto eyenza kube yinto ekhathazekayo. Umqondo: 'uma i-D2 receptors ziyaphinde ngendlela eminingi ngeminyaka engama-12-17, ngingakwazi ukuthatha iyaka elilodwa, ngivumela umqondo wami ukulapha, bese ngazi kanjani ukusebenzisa ngokuphephile futhi, noma ngizobuyela ngegama elisha.' Ukuhlela kwesikhathi sokulungiswa kwezinto zokuziphatha—'ngokusikuma nje, ubuyela kwi-addiction ephelele ngayimisele'—akuyiqiniso eliphelele. Kodwa isimo esithi ukuvunyelwa okude kusenza ube nge-zero akuyiqiniso eliphelele. okunye. Impendulo eyiqinile isihlala phakathi, futhi ukubanga yindlela engavamile yokuchaza ukuthi kungani.

| Yini Okunjinzile (Njengokubhakeka Kwembandela) | Yini Eqinile Nokunye (Kungani IGait Isashintsha Kaningi) |
|---|---|
| Ibhane libalele. Izinga le-D2 receptor, ngokwedluleko lokuQaga 3, libalelela ngempela kukhonzo okubonakalayo — lokhu akusona isihloko esihle noma indaba yokuzibophelela, yikuphi okubonakala kulo mqondo. | Ibhokisi eliphilile alibangi ngisho nokuphathwa kwalo okungabanjwa. Liqhubeka nokubuyiswa phakathi kwecala. Lingakwazi ukuthwala umthatu omthethweni futhi — kodwa akukhohlangananga isilinganiso esifanayo, kubhekana nomunwe omuhle, indlela efanayo, ngaphandle kokuthi umzimba udinga ukufunda kabusha kanjani. |
| Ukuhlupheka kuyayisiye ngempela lapho kukhona ukuzinikela kwesikhathi esiqondile—lokhu kubhalwe kahle kwezomnotho zama-pharmacology, akusiyo ukufakazisa. | Ukulahlekelwa komthwalo kusho isistimu esisebenza ukulawula umbala othile engakwazi namuhla ukulawula yonke into ngendlela evulekile ngokuphelele. Ukubuyela ku-"indlela" yokumbala emakhawini emlandweni kaqiniso kukuphakamisa umzimba onguqile ikakhulukazi, noma ngabe ingxoxo yokuqonda ukuthi yikuphi okwakuzungeza kanjani. Lokhu kubuhlobo obukhethekile lokungaqondakali nokukhathazeka kwemvelo (Ibhizinisi 0) okubonakala ikakhulukazi ekubuyeleni emlandweni ngemuva kwesikhathi sokulapha — akusona ngoba umuthi ukhule, kodwa ngoba amandla omzimba lokulawula kuye ayaphoba ngenkathi ukubekezela kungekho. |
| Ukuchaza okudala "ukubuyela ngokushesha ekuziphathimiseni ngokugcwele" kuphakamisa kupela ukuthi i-neurology inamandla kanjani futhi ingaqondakali kangakanani. | Cha kusihle futhi ukuthi akusiyona into engayisi. Ikhadi 6 elithi ngombala we-epigenetic livela kuphawula indlela ukuthi ukubekezeka kwemisebenzi yezibalo zokukhetha kuthuka ngenkqubekela ukusebenzisa okungaphakathi — futhi leyo ndlela eyathuka ayifanele ukuba iqondwe lapho kuphinde ivuseleleka. Indlela esayidlulwa ngaphambilini ingakwazi ukuhambiswa futhi ngokushesha kunokuthi ishiye indlela entsha yokuqala. Lokhu kukhokha ukuthi ukubuyela emhlabathini ngemuva kokuzisola konke kudinga ukutholakala okusheshisa kunokuthi kusetshenzwa kuqala, noma lapho izimelezo zokuhlola zizaphinde zikwazi ukuphila. |

### ⚠ ISIMEMBE

Ngokucacile: isikhathi sokungathola okuthile akusiyo ibutho lokubuyisela kuqala, futhi akusona lapho kungenakusiza—yonke imiqondo emibili eyayizwa ngokuqala kwesici esilandelayo iyasuka ekuziqondeni nasezingatholakali ngokweminye ndlela. Okokwenza ngempela ukwakha isistimu esisiletha umbala lapho iSicelo 3 isichaza, kodwa esihlale

sihlukile ngokusekelwe kulokho kwakukubonakala ngaphambi kokusebenzisa—ukuphawula okuhlukile, ukuvuleka okuhlukile ekubuyiseleni ngokushesha, ikakhono lokuthambeka komhlaba. Ukuzama ukusigcina isibindi esifanayo, ngendlela efanayo, yikuyo lapho inhaka iqala khona. Lokhu akuyona inhloso yesayensi Isiqalo sokuphinda ngemuva kokuhluleka okungenayo siqhuba inhloso yakhe enkulu, ehlukileyo, engaphezu kwesikhuphuka esithi "selungele manje" noma "ngokubuyela lapha ku-square one."

### *Isihloko Esithize Esidinga Ukucaciswa: 'Izeli Zakho Ziqhubeka Zihamba Ngokuphelele Njalo Iminyaka Engama-7'*

Lolu chazama lukhulunywa kakhulu, okuhlanganisa namabhizinisi omphakathi wokubuyela ngokukhethekile—kodwa akubonakalanga lapho kuhlolwa ngokusho ukuthi kwenzeka, futhi iphrojekthi elilungisiwe libe yindlelela esebenzayo kunalo mithi, akusona ukuba kube mnandi. Izinto ezahlukahluka zishintsha ngezinga elihlukahlukene: isikhumba kanye nendiza yesifuba phakathi kwezinsuku ukuya izimpanga, amatiro emoyeni ngisho futhi ku-10% ngonyaka, iqembu lokuqala ngisho futhi kuku-dekade. Kodwa indlela ebalulekile kakhulu ngokwesiko yonke le ndlela elihlanganiswe kuyo—izinyalo ezikude emoyeni wezifuba—akuzibalekelwa ngezinga elihle ngemuva kokukhula kwasekuqaleni. Izinyalo ezibandakanyekayo ezindlela zokubonga le ndlela yonke elihlanganiswe kuyo, Ngokukhulu, yizinto ezifanayo zama-seluli emzimbeni wakho ngaphambi kokuthi usebenzisa imethamphetamine. Azishintshwa ngezinemihle kuphi lapho khona, iminyaka eyishumi eziyisithupha noma yini.

Yona manje umnyaka nalesi sikhathi, ngoba yizinto ezinhle, eziyahlukile kancane kule mito. Okokuqala, okukhululekayo ku-timelines kulo mqondo lokuthi iziqephathu ezintsha ziyathlela iziqephathu ezidilayo akusona—kuwohlaka umbala, ukuzizwa, kanye nokubonakala kwezixhobo emehlinyweni abakuhlala khona, kanye nezixalo zokuxhumana phakathi kwazo (imikhiqizo yezepigenetiki esiqephweni 6). Okwesibili, ukufa kusebenzisa umkhawulo omkhulu, ngokusebenza ngendlela ehlukile futhi eyaziwayo: ukushilo kweziselula. Njengoba umzimba uyaqhubeka nokuzoba, iziqephathu ezithile—okuhlanganisa iziqephathu zothando emehlinyweni—ziqala ukungakwazi ukuphathwa kodwa zihlala zisebenza ngokumbala, zikhombisa i-signaling molecules zokubusa ezigcwala ngenkathi. futhi kuthanda emandleni okuphila okungaphakathi kwe-neuroinflammation. Lokhu kuyiqiniso, isayensi yokuqala kwemandzeni kanye nokugcina umzimba, futhi kusho ukuthi isimo esizilungisayo sangaphakathi sisho ukuthi asiyona inhloso ehlanganisiwe—singakuzwa kuphila ngendlela yokugcina umzimba ngesikhathi sokuqondisa, okungenza kube nokungenzeka ukuthi yonke inqubo ihlizwe noma iqhubeke kancane njalo lapho isikhathi kanye nezisetshenziswa eziningi zidlulile, ngokuzinzile ekuhambeni kwama-dopamine esihloko 3.

### UKUZWA

Ngoba izinyalo ezifanayo zihlala kancane kunokuthi zishintshwe, izindlela zakudumo lesiqhuba sibe yisihloko—ukukhathazeka kokubuka kabusha, izimpendulo zokufunda ngemibono—akusizayo emva kwakazwe. Ziqhuba kancane, ezikuhlala kulo mqondo, zakuhlelekile. Lokho akusona ukuthi kusihle ukukugcina iminyaka yomsebenzi

wangempela njengokuthi 'yakusifeli' noma 'angilinamandla nokukwanele', noma ukuthola ukuthi 'ngumuntu onomthethweni, ngizoba ngaphakathi njalo' ukusuka ekubuyeleni. — kodwa ngisho nokuthi umnyango kaokuqaphela ukuthi usuku lokuqala kwakungekho ukuphoba okuzokhipha izindlela ezingalizeki ukuthi zizokhipha kuqala. Umsebenzi eqondile akusona ukuphoba okukhohlakala. Kuyakhiwa izindlela ezintsha, ezibamba ngamandla kwaye zingaqhubeka nokuba yindlela eneziphepho—okuyinto eqinisekile ukuthi ikhasi 11 i-Protocol 20/C-28 imkhuluma ngekuhambisa le ndlela yokubonga lapho ukuya emuva kwezinto ezinhle, kunokuthi icabanga esizibona singaphinde sibe yindlela eneziphepho. Futhi kudingeka kusho ngokucacile: ukubuyela ekuthiwe ngoba usuku lokuqala akusona ukuthi umuntu ethola ukuthi angakwenza Ukuhambela ngakho. Ukuzimiselela kwesithunzi somuntu oyisisekelo—ukubhekana, ukuhlaziya, noma nje ukuthwaliswa kabi okuthile njengoba abantu kuthiwaliswa ngakho —kuyindlela yokuzibandakanya eyiqinile futhi eyafanele, ngaphandle kokudinga indaba mayelana nokuzimela kwamasiko noma ukungaphumeleli kwezindlela zokuziphatha.

# Ibhizinisi lesi-4 — Okokuthi Ngizokumona Ukuzwa

I-timeline kuGadololi 2 ikukusho ukuthi yini okwenzeka ngokubili futhi ngesikhathi esingihlanzekile. Isigaba esilethoe sihlukile—ukuwumzamo wokuchaza ngempela ukuthi kuyathaka kanjani ukuzibuza, ngezinye izindlela kakhulu kunazo zonke eziyikwazi yisigaba sika-table, ukuze lapho kuphakathi, uyamkhomba ukukuziva kusho ukuthi uyazikumbula kunokuba ukhathazeka ngakho.

### *Ukungufukupha - igiletha eliqinile kakhulu lokuhlupheka*

Inhedonia ivame ukukhulunywa njengezinye izinto ezifana nezinye zizokuboniswa ngezigaba eziningi zezinto zokuhlupheka — 'ukungakwazi ukuzwa injabulo' — njengoba ukuthi lokho kuqondisa konke. Lokho akukona. Okuyizinto ekuphazamisekile, kubantu abaningi, kudinga ukubheka impilo yakho ngokusebenza kwesikashi: ukudlela akuzonamthindo, umculo owangathanda ukhomba manje usona nje umsindo ngaphandle komuzwa ohambelana naye, inganekwane iqhubeka njengolwithi kunokuba yinto ejabulisayo, umuntu owathandayo akubanga ukunqoba okwakungakubangwa ngokuba eduze kwakungakwenzekile. Akusona ukuthi usiletha ukuzibophelela. Kuyona indlela i-machinery eyayigcina 'into enhle ehangayo' ibe yingozi yokuzwa Iqiniso ukuthi i-'good' iyasebenza ngephansi kuka-signal yayo ejwayelekile, ngoba le yinjini ngokwethekisiwa yisimempha esihlanganisa dopamine lapho methamphetamine isithola futhi isibeka. Lokhu kuyilasi elingabonakali kakhulu kwesinyathelo konke, ngoba singakwenza ukwesaba okusetshenziswa kuphakathi komunye umkhawulo — 'yini uma angizizwa lutho futhi' — futhi lokho kusaba kudingeka likuchazwe ngokucacile: ngokwesekukethalo kwedatha yeSection 3, lokhu kuyisimbo esiqondishwa, isimo esingaphandle komsebenzi, asikona ukuguquka okungapheli kwengqondo.

### *Izimpawu ezingatholakala ngokucacile*

- Ukuzinikela kwizinto kakhulu kanye nokuhamba okungaphansi kwezinto noma ngabe kuphakama ukulala—isimo somzimba sangaphansi sasingaqhubeka ngokukhawuleza njengoba umzimba udinga ukulala.
- Izifiso ezimangalayo, eziqondile ezithoba ngaphandle kokunikeza isiqalo esingabonakali, ngokuvamile zivuleka yinto engumthwalo kakhulu — itshiwo, umculo, isifinyezo sesikethi — futhi zingakwazi ukuzwa, ekuseni, njengento endizokwenza ngoba ingaba yinto enye eyokwenza lo msimanga ibe yingakwenzeka.
- Ukungazizi nokuba namandla amancane angakukayisa wena kanye nabantu abangokujikezela, ikakhulukazi emaphosweni okubhekwa (Izinsuku ezingu-1-5).
- Ukungaqondi okungenalutho—ukuzisola amagama, inkinga yokulandela ingxoxo, umuzwa wokucabanga njengokuhamba emhlathweni. Lokhu akusona isigameko sokuba yiletha ubuhlungu obuqhubekayo; kuqhuba indlela efanayo yokubuyela njalo kwazo zonke ezihlanganiswe eSecanti 2 kanye ne-3.
- Izibane, ngezinye izikhathi zizimangalisa izibane lapho ukulala kuqala futhi umqondo wenza imisebenzi eminingi yokubuyekeza iREM ngemuva kwesikhathi sokulala esilimazayo noma esingahlanganisiwe.

Lona yikwazi ukubheka kanzima, ngoba ngokuvamile kubuhlobo obungabonakali kakhulu kodwa okungcoliseki kakhulu. Isiqiniseko esifanayo sezibophezelwe ku-BDNF esisizilungiselela isistimu ye-dopamine (Ibhizinisi 3) siqeqeshwa ngokusebenza nge-glutamate signaling — i-glutamate kanye nokusebenza kwe-NMDA receptor yingxenye ejwayelekile, eyudingekayo yokuthi izibophezelwe ziqiniphise kanjani, hhayi nje isimo esingenakukwazi ukusetyenziswa. Ngakho-ke umsebenzi wezimpi emininginzeni lapha ku-recovery window uqondishwa ngezingxenye ezimbili: umsebenzi wokulungisa okwenziwayo, lapho ukumbona kwemimpi okukhulu futhi okujwayelekile kungenza isimo esingokubuhlobo komsebenzi lo, hhayi nje isigameko sokuthi kusahlukile isiphazamiso. Ngakho-ke ku-abanganye abantu lokhu kutholakala ukuthi kuyaphakama kunokuba yizinto zokucabanga kuphela — ukoyeka izimpikiswano ezimangalayo kuze kube nokukwazi ukukususa ngayo ngokomzimba, ngezinye izikhathi ngokulangazayo lapho usihluku, okungaba yinkinga yakho yokunemulo kwesifo sokulala esikhiye phezu komunye umthwalo wokulala. Abanye bazi ukuthi bazizwa bekhumbula izimpikiswano ngedetayile izingabe abazihlale bekukumbuka — kuqala ukukususka nokungazizi futhi bakwazi chaza isimpi kude, ngezinye izikhathi bekhola ngokuzakhuluma ngayo njengokuthi yinto eyenzekile ngempela, ngaphambi kokuba umbunye uqhubeke. Konke lokhu kuhlanganiswa nokubuyela kwesinyathelo se-REM kanye nokuguquka kwezinethiwekhi ezenzeka phakathi kwalesi sikhathi, akusona izimpawu ukuthi okuthile Ikhona okungahlanganiswa nokuqonda kwakho kwempilo.

#### UKUZWA

Uma ubekufunda incazelo yenguquko yokuzwa ukuthokoza (anhedonia) lapha futhi wacabanga 'yiyo lokho, futhi ngabe ngingayikwazi ukukuchaza' — le ndlela

yokuziphatha iyivamile, futhi kufanele ukhulume kuwo. Abantu abaningi bayaphela kulo mqondo othize ngokuzizwa njengokuthi kunoko into engiqondile ngabo, ikakhulukazi ngoba akekho umuntu oyakuchazela ngokwanele ukuze bakwazi ukukubona njengento eseyaziwayo, isebenziswa, eyenzeka kubantu abaningi abaphela lokhu. Inguwo yakhe. Inemikhawulo. Akukho kuwe.

### *Yini Eyenza Lokhu Kuphazamiseka Okukhulu: Izinto Ezifanele Kuzihlonwa Ngokuzivikela*

Okukuchazwa okuningi kwakhiwa phakathi komuphetho lo mzuzu kuzoba kwenzeka noma yikuphi—isikhathi esikubonishwa eSecanti 2 neSecanti 3 sihlala sibe yobuhle bomkhuba. Kodwa okuthile okenza ukuthi umunye umuzwa ube unamandla okuphatha kuze kube nokungaphakathi kuye, akusiphi inqubo yokuqondisa isizathu—kuwowo izinto ezithize, ezingalungile, ezisetshenziswa phezu kwakho okukhali ukuthi zenza ikisindo esiyabuhlungu kube yinto enzima kangaka. Ukazi ukuthi yini leyo yini kuyathunya, ngoba kusetshenziswa kalula ukuqhathanisa 'lokhu lwandile ngenxa yoko ngikukandile/ngikukhiphe/angikaphumanga' no-'lo kuphela umuphetho lo aksebenzi,' lapho impendulo eqinelayo ivame ukuba yinto engakusiza kakhulu.

| Yini eyenza kube yimbi kakhulu? | Kungani |
|---|---|
| Ukudla okunamadoda amaningi kanye nezinzi zokugcina ukushilo kombala (high-glycemic) | Ukuthiswa kwemvulo yombala kanye nokuhamba kokuphansi komkhawulo kunamandla okungaqondi okukhona kusukela ekuphepheni kwa-dopamine — ukuhamba kokuphansi phezu kokuhamba kokuphansi. |
| Ikhofi kanye nomuthi we-alcohol | Kuhlonishwa ngokugcwele eSifakeni 3 lapha — i-caffeine ngendlela emgqamela, ngenxa yokungena umkhawulo wokulala kanye nokukhuthazwa kwe-HPA-axis; i-alcohol ngqo, ngenxa yokuphepha kwe-REM phezu kwokubuyela kwe-REM okwenzekayo. |
| Inikotini kanye nezinto ezithuthukisayo ezingathile | Omuhle kakhulu, kodwa kufanele uzihlazwe ngokucacile: noma yiphi isithimulant, okuhlanganisa i-nicotine, kukhulisa indlela yokubona umthwalo kanye nokuzivocavoca (arousal) ehlukaniswe ngale ndlela yonke loMkhawulo oyafuna ukumvumela ukuthi uqhubeke. |
| Ukuhlala kude nokuphumula okuhle — izikrini ngebusuku, ukulala okungaqondi kahle usuku lokulala | Lihlukumeza ngqo uhlaka lwekuphila okubhekene nokuphumula (ukwakha i-BDNF, ukuhlela ingqondo) elilokhu liChiki 3 seKhanda 8 liqhuba njengomkhuto omkhulu wokudlulisela isikhathi sokubuyela esikhiwini seKhanda 3. |
| Ukungcola kwamanzi kanye nokudlula ukudla | Inhliziyo ingenza umsebenzi wokubonelela kangaka kudinga ukugcwaliswa kwesikrini esiqhubekayo kanye nokunakekela imizimba; ukusebenza ngokushelela kuqinisa isigaba sesibili, esingadingeki sokukhuphuka phezu kwakho okubonakalayo kwezinto ezenzekayo ngokwemvelo. |

| Yini eyenza kube yimbi kakhulu? | Kungani |
| --- | --- |
| Ukuhlala lapha kuphakama | Akusidlo noma into, kodwa kudingeka kuqondiswa lapha — ukuhlala lapho kudlingisela ukuthi konke umthwalo wokuhamba olo libhalwe ngalo libukete lalisibhalayo, futhi kususa ukuxhumana komuntu osizo ohumusha ikhanda eliqondishwa yisiKhanda 0 njengokuvikela phakathi kwesikhathi esinamaphazamiso amakhulu. |

**SANCTUARY**

Ukuciko kuyingozi eliqondile kuleli phawedi, futhi kufanele likhomba njengento eyakhiwa akusona ukuthi libe namanye amaphuzu okuziphatha ngokwengeziwe. Ngokubhekisela kuSection 8's Tier 3, liyindlela eziyinhloko yokukhiqiza i-BDNF eyenza umzamo wonke isikhathi sokubuyela esikhiwini kuSection 3 — kakhulu okuningi, akusona ukuncipha, yile ndlela ejwayelekile yokuhamba lapho ikhono likuvumela.

**UKUZWA**

Lokho okubalulekile ukusho ngokuqondile: yonke into enokuthawusa kulo mqondo wokubuyisela impilo—ukuba yimihlaba, ukungaphilile, amadili anamandla, izidingo—ngumzimba wakho osebenza ngokuzimele ukuze kube yilungise. Akusona isinyathelo sokuthi kukhona okubi. Kuyilula, phakathi kwalo, ukubiza ukungaqondile kokulungiswa njengombono wokuthi impilo ayisebenzi, futhi ukuthola umuthi ngokukhexeza ukuze kuvuleke umthunzi womakhala ongenalo isizathu—akusona ngoba isidingo saphakama, kodwa ngoba akekho omunye okhuluma kuwe ukuthi lokho okuyizwa kungenzeka, kungenayo isikhathi, futhi kuyinto ebenza. Ukazi lokho ngaphambilini akusona Yenza kube khona ukungazifaki. Kodwa gushintsha ukuthi kuyini lokungazifaki, futhi lokushintsha ukuthi wenzani ngakalo.

# Ibhizinisi lesigama 5 — Izinqubo Zokusebenza kanye Nokubambisana Kokuqala Kwesonto Lokulala Nokuqala Kwesonto Lokuphuma

Akikho umuntu ngamunye oqala ukuthola ubuhlobo nengcindezi yama-methamphetamine ngokuthi esuka emfundweni noma ekungilweni. Izinothi eziqhakazile futhi eziyisisekelo yindlela yokusebenzisa eyayiqala, noma yayiphakama, ngokushesha ukusebenza—izikhathi ziningi, imisebenzi eminingi, ukunakekela okaphezu kwesuku lokusebenza eliphelele, umkhawulo wokuzibeka phansi lapho ukuleka akubonakali njengokuthi yingxenye. Isimo sokukhuthaza se-methamphetamine singabonakala, isikhathi esithile, njengendlela yokugcina ukubhekana nesikhangiso esasengekho emuva ngokusuka. Lolu hlobo lusebenza lidinga ukuzakhumbula ngokwakho ngoba lwenza umuthi othize futhi ohlukile abantu abangakwazi ukumbona kulezi zindaba eziningi zobuhlobo nengcindezi yama-meth.

**⚠ ISIMEMO**

Ukungaphezu kwesikhathi, ukungaphumulika okunzima—okuhlolela ngokusebenzisa isilawulo ukuze kuphakathi ijinji elingalindeleki yimzimba—kungakwazi ukwenza umbonakaliso lapho umqondo wezifiso uqala ukungena emiqondweni yokuziphila: izithombe noma imizwa emfutshane, ekhazimulayo, ejwayelekile njengenzuzo ngenkathi uzizwa ukuthi uyasaphila, ukuziva engalubonakali, noma izikhathi lapho ungakwazi ukuthi yini okwenzekile noma uyamqondisa. Lokhu kuyingozi eliqondishwa ngokucacile kubuhlungu bokungaphumulika okunzima ngokwawo (okukhulunywa ngezinye izizathu njenge-hypnagogic intrusion noma i-microsleep nemiqondo yezifiso), akusona isignali se-psychosis ngokwayo—nakuba likwabelana ngezinye izici ne... Inhloso yobuhlungu eyaziwa esIbhizinisi 0, kanye nendlela onoma yayo enihlanganisa imiqondiso yokuzibona (paranoid delusions) noma ukaphuma kwesifundo sokubona (break from reality testing) (okungahlanganiswa nezinto zokubona ezincane, ezingathi ezizivela ezimweni), kufanele ziqenisele njengoba isihloko esithi Isibhizinisi 0 sichaza.

Uma le ndlela iyakuhamba, umsebenzi wokuthola impilo uquketha okungabonakali kahle kule ngcwathi: ukulungisa ngokwenene ukuzinzilela okuphakama, hhayi nje into yomzimba. Ukwakha kabusha isisindo se-dopamine (Ibhizinisi 3) ngenkathi ubuyela ekuhlalweni okusizwa ngendlela esikwenza kuqala ukuba namandla akuzinzilela, lokhu kukwakha kabusha emweni izimo ezaziliphakisa. Lokhu kudingeka likuchazwe ngokunemusa kunokuthi libe nje lishaywa.

## Ibhizinisi lesi-6 — Ukubuyekeza Kwemibhalo Yeziqalo

| Iziqiniso | Okuthi Kuyinqabile Kanjani | Ukubalulekile Lapha |
|---|---|---|
| COMT (Val158Met) | Isivinini lokuhlala kwa-dopamine | I-val/Val ('Induna,' ukuhlatshelwa okusheshayo) yileli phrofayili yokungaqondakali ye-methamphetamine ikakhulukazi — isisindo esihlangana nokuphumula kwesizotha, isimo esitholakalayo kulo signal ekhulu ye-dopamine ye-meth eyayibonakala ekuhlangeni lokuqala lokusizwa okukhethekile. Ukuthuka kusadinga izinto ezibalulekile zokungaqondakali, hhayi nje ukuzinikela. |
| DRD2 / ANKK1 (Taq1A, A1 allele) | Inani le-receptor ye-D2 | I-circuit yomuntu onombala wa A1 lihamba nge-D2 egaphile — Syndrome Yokungabi Nokufaneleka Kwemisebenzi (Reward Deficiency Syndrome). Lokhu kukuqala okubalulekile kakhulu kwezinto ezithandwa zokulungisa ukuziphilisa (i-'Brain Stack' kuGadololi 8), ngoba yisimo somuphi umsebenzi |

| Iziqiniso | Okuthi Kuyinqabile Kanjani | Ukubalulekile Lapha |
|---|---|---|
| | | odinga ukubuyekeza inani, hhayi nje ukuhlisa uziyona. |
| MAOA (uVNTR) | Ukuhlukaniswa kokusheshisa kwa-dopamine, iserotonin, kanye ne-norepinephrine | Izibalo ezingaphakathi zenza izimonoamine zibhakabhaka; izibalo ezikhuthazayo zizilungisa ngokushesha. Iqiniso lesibili lihlanganiswa nokuzivikela okukhulu kanye nokuphazamiseka kwesanduku — kubalulekile ku-timing yezinto zokunakekela kanye nokwazi ukuthi kukhona ingonyama yokubuyela emuva. |
| BDNF (Val66Met) | Ukuhlanganisa imvelo yomzimba kanye nokuzivocavoca kwesignalo | Abathwaliwe abakwenza i-BDNF kancane lapho kubhekana nokuhamba. Ukuzikhandla okuthuthukisayo kwe-BDNF kunokuba yinto ebalulekile kakhulu yokuthuthuka kwemvelo kulolu hlinzeki lonke — kuphumelela noma ngabe ubani umgeni, kodwa abathwaliwe baMet bangase kufanele babe nemiqondo yokuzivocavoca okukhulu ukuze balethe isigqi sokulungiswa esifanayo. Lokhu akusona ukukhethwa — yilezi zindlela zokulungisa ngokwayo. |
| CYP2D6 / CYP2B6 | Ukushisa kwezinye izinombala ezihlobene nokubuyela impilo (njengobupropion) | Kuyadinga ukwazi uma kuqala phophpho noma yisipho esithile— abatholakala kabi (poor metabolizers) bayazi inkinga yokungcola emindleleni ejwayelekile; abatholakala ngokusheshisa (ultra-rapid metabolizers) bayakwazi ukuthi angikubonisi. Kudingeka kuqondiswa kumphathi phambi kokusebenza nentoho ethile. |

### *Kanani i-COMT Ishintsha Kanjani Into Engizwa Ngokuthi Ukudlufa Kwesimo*

I-row ye-COMT lapha phezulu inika igama elithi i-genotype; lokhu kukhuluma ngokuthi kuyakhona kanjani ngempela usuku ngemini, kuba iVal/Val ne-Met/Met ziyaphuma ngokuhlukile kangaka ukuthi kufanele zishwikelwe ngokwehlukanye kunokuba ziye njengogwadini elingabonakali.

| I-profaile ye-COMT | Isiqalo Ngaphambi kweMeth | Kanjani ukubonakala kwa-Crash |
|---|---|---|
| Val/Val ('Ibhasi') — ukuhlukanisa i-dopamine ngokushesha, kwenza umbala ophilile we-dopamine ukhulela | Kakhulukazi kungenziwa umthwalo lapho usemthethweni; uhlukile ekuzibeka emlandweni, ukuthola okusha, kanye nezimo ezihlangene nokuphazamisa ngisho nangaphambi kokuthi kube khona ukusebenzisa noma yini. | Ukubanga kokungaphakathi kudingeka kubonwe njengokuba yimvakalelo yokuhlupheka okukhulu kanye nokuzwa ukungathandeki—njengokuba kuyisimanga esingaphezulu, esingashintshwa. Ukulahlekelwa komuzwa wokusebenza kumele kube yingozi enkulu. Izidingo zihlala zihlonishwa ekufuneni ukuzwa luthi luthile futhi ngempela, hhayi ngokubekezela ukuqhuka kwenkinga. |
| Met/Met ('Umkhathisi' / 'Ubunzisi') — ukuhlala kwedopamine okusheshayo, idopamine ephakeme kakhulu kanye nethunzi lezingcindezi zemikhiqizo yezigqi. | Kunjalo kukhala kanxaku noma ukucabanga kakhulu ngenkathi kuphumula ngisho nangaphambi kokuthi kube khona ukusebenzisa lutho; isimo somzimbe sinombala wokugijima "okujulile." | Ukubanga ukushaya kumele kubonakale nengcindezi enkulu, ukucabanga okuningi (rumination), kanye nokuzimkhathaza kuphakathi kwesimo sokuba sihlanzekile — akusona nje umoya onombala ophilile kodwa ubuhle obungaqondakali futhi obungekho. Lo mqondo unamandla futhi ukhuthazeka ukubona ukugcinwa okukhulu (hypervigilance) okuchazwe eNg4, futhi kungathola imiphumela yokungazizi kwesifo esichazwe eNg5 ngokuthi isizathu sokukhethwa kwezinto zokucindezeleka. |
| I-valenti (Val/Met) | Isiqalo esiphakathi phakathi kwemifanekiso emibili lapha. | Okho kakhulu ukuhlangana kwezindlela ezimbili—okungathi kubekeka okuncane, okungenakuthula—ngaphandle kokuba noma yiphi elilondolozi njengezifulozo zokuzibophelela. |

### *I-GABRA2 — Isinqubo se“Brakethi” Ngenkathi Ukucilisela Akusilula Kufanele NgabaZulu*

I-methamphetamine ngokwakho akusiyo dawami elihlanganisa GABA-A njengoba yizibenzodiazepines — kodwa i-GABRA2 status isesemthethweni lapha, ngoba inkinga ehlukile. I-GABRA2 igcina umbala kanye nokuzimisela kwesistimu esiyinhloko yokuliphula (yokubambela) yengqondo — ikakhono elihlanganisa ukusebenzisa i-brakes kumthwalo, isizathu, kanye nesimo ngemuva kokuba sisebenza. Lokhu kukhulunywa ngqo kubizo lokuthi "hlala nje" kuphakama kanjani umuntu othile, ngokuhlukaniswe nokuzibamba kwengqondo.

| I-Profile yeGABRA2 | Lokuthi kusho kanjani ukulanda |
|---|---|
| Ukusebenza kweGABRA2 okuncipha inhlandla / okujwayelekile | Ukutholakala kwekushintsha kwesimiso sokubambela okungokuvikela—inketho yokusebenzisa, lapho ivunyelwa, inokulungiswa kancane ngaphambi kokuba ibe yenzakalo. |
| Ibhizinisi elikhazimula kakhulu le-GABRA2 variant (uhlobo olubangele ukuthi umoya wokuvikela ukhanyisa) | Kusho ukuthi ikhona amandla okuphazamiseka anganele ngaphambi kokuba kuqale ukusetshenziswa—okukho kusho ukuthi isikhathi phakathi kokuthanda nokwenza kuyasheshisa futhi kancane ukulandela ngezingqondo kuphela. Lokhu kubonakala njengokungcola kwe-hardware, akukona ukuhlukana kwamasiko, futhi yile ndlela yokusebenza ye-GABRA2 eyatholakala emakethewe e-Recovery Kernel's GABA Braking Systems material mayelana nebenzodiazepines kanye no-alcohol—iyahlanganiswa lapha kuphela, kodwa kuphathelene nokulawula imizwa ngokuvamile kunokuba nge-GABA-A drug ikakhulukazi. |

**SANCTUARY**

Uma ukuthi ukukhipha kwakuzwa kuba nzima kunezinye izinto lapho ubona umuntu oyakwazi okusebenzisa idakamizwa efanayo ngendlela efanayo — lokunaka kungaba yinto eqondile yokuhamba kwezinto, hhayi ukungabi namandla noma ukuzibophelela. Isimo se-GABRA2 yisihloko esithile sokenza ukuthi "khona nje" kube umsebenzi oshesha kakhulu kubo bonke ama-nervous system amehlangana nengcindezi efanayo.

## *Phakathi kweGenes Uziqala Ngazo: Ingabe Ukusebenzisa IMeth Gushintsha Ukubonakala KweGenes?*

Konke emabhodweni aphezulu kuphathelene nehardware yezigene umuntu analishwa ngayo. Umbuzo osemthethweni futhi okhuluma kakhulu ukuthi ukusebenzisa i-methamphetamine ngokwakho kusenza kanjani ukuthi izigene ziqhubeke zibonakala — akusihlanganisanga isigqi esingaphakathi seDNA, okungayishintshi ngezinye izindlela, kodwa imakhawulo epigenetikhi aphawula ukuthi yiziphi izigene ezivuleka noma eziphakwa, kanye nokuthi ngendlela enjani. Lokhu kucacisa: akukho umuntu ongenziwa isigqi sezigene sakhe ngokusebenzisa into ethile, kodwa iyingca zokusebenza zezigene ezithize — ikakhulukazi izigene ze-dopamine-pathway kanye nezingene zokuziphatha ezigxoxwe ngayo kulo mqondo wonke— zingakwazi ukushintsha ngokwenzo okuqhubekayo.

Okutholakala kakhulu e-neuroscience yezindawulo (lokhu akusohlali nje ngokusekhona kwemeth-specifc, kodwa i-methamphetamine ihambelana nezigaba ezinkulu zolimi olukhiqizayo): ukubonakala okungaphakathi kwesithimulizi kukhuthaza ukwanda kokuhlala kwe-*transcription factor* ebhizathu ngokuthiwa nge-$\Delta$FosB emigondweni yezindawulo zokubonga, okusuthola ukuguqula ukubonakala kwezinhlobo eziningi zezinhlobo ezilandelayo ezihlobene nokuziva kwesikhangiso kanye nokuphakamisa — lokhu kubonakala kuhlanganiswa njengokuthi kunye kulokho kukhulu okubhekwa kuyo emfundweni yezindawulo ye-molecular, okuchazwa kumabhuku asekelwe lapha i-bibliography yalesi sihloko (Nestler, 2001, mayelana neyonyaka ye-molecular yokuzivikela okuphakamisa

ukugcina kwesikhathi esihlobene nendawulo). Ingabe i-methamphetamine inza izinhlobo zokubika ezigcwele ezithwalekileyo emaphoseni ngaphezu kwakho? Lolu hlelo elijwayelekile—futhi ukuthi noma yiluphi la makhawulo alawula lokhu kungakwazi ukuhambisana ngeminyaka eminingi, njengoba kukhona imihlola yemindawo yezilwane mayelana nezinto ezithinta futhi izinto ezingatholakala—yindawo yokufunda enomsebenzi maningi futhi engakusaphazamiseki ngokugcwele. Kufanele kube ukuzibeka kwesayensi ukuthi lokhu kuqondishwa njengokuthi kuguqinisekile; yingombela elingizwa, alona uqiniso oluchazwayo manje.

**SANCTUARY**

Lokhu kukhulu okufanele ukulikelwa: lesi sinye isindlela esisemepigenetikeni siqhuba emiqondo emibili. I-Recovery Kernel yizinto zakhe mayelana nokuzivocavoca kwe-neuroplasticity ekhuthazekayo ngemdlalo isichaza ngokuthi 'isibopho sephakathi se-epigenetic' — umsebenzi wokuzivocavoca, ukuhambisa imisebenzi yomzimba kuvela izinguquko ezikubonakalayo ekubukweni kwemigomo emele ngesikhathi esikwaziwa (ukuqonda nokuba yinto yokuqishindo ngekhonsi 1-3, izinguquko zepigenetiki eziyokubonakala ngekhonsi 3-6, isizathu esisha se-neurological ngekhonsi 6 lapho futhi ngemuva). Ngisho noma izinguquko zemigomo ezikhiqizwa, umsebenzi wokubuyisela we-Tier 3 eNgondo 8 akusona nje ukulawula izimpawu — kuwumsebenzi osihlala kulo mselulo womzimba ofanayo, emqondweni omngeni.

## *Ubani Lowogu Angwenza Ube Ngimpilo: I-Profile Elikho Kwezinhloso Zokuziphathwa Ngemvelo*

Nginokuthi konke kulo mdokhili kukhulunywa ngokuthi ukuthwala inhlonipho, uma kwenziwa kahle, kuveza kubo bonke abantu bangaphezu kokuhlela kwezinsizakalo—isikhathi singahlukanisa noma singasiza lapho kuhlanganiswa nezinye izinto, kodwa kuveza. Kukhona iprofayili eyodwa lapho lokhu kusho khona ukuthi akukhokhona, futhi kuyadingeka ukusho ngokucacile kunokuba kubekwe phansi ngaphakathi kwetebili yezinsizakalo.

**IXOKO ELIBUHLEKILE**

Ngokubambisana kwezinye zizathu ezithile zezilwandle nezimfihlo, ukusebenzisa i-methamphetamine kuneminingo eyahlukene ngendlela, hhayi kuphela umzilawulo, kumahluko yonke emhlahlandweni lolu hlinye—okubandakanya ingonyama yokuziphakamisa kwezinkinga zokuphikisa (psychotic disorder) engingavuleki ngokuphelele ngokusihlala. Lokhu kuchazwa ngokugcwele lapha ngezansi.

| Ibhodi | Kungani Lokhu Kuhlukile NgUhlobo, Hhayi Kuphepha Kwesimo |
|---|---|
| COMT Met/Met ('Sage'/'Worrier' — ukuhlala kuphansi kwe-dopamine, i-baseline dopamine ephezulu kanye nethunzi lezinto zokucindezeleka) elibambeke nokholo noma umlando wasemndenini | Lolu hlobo lwezindlela elilungele umkhondo we-Recovery Kernel libhekisela kucathinones esizinzile (MDPV, alpha-PVP): isithimbu esikhuthazayo esiqondene ne-dopamine, esinikezwa kulo mqondo ongenalo ukuzinza kwe-serotonin, siphakamisa inkinga enkulu yokuphazamisa i-psychosis emhlabathweni wezinto ezihle. Kubantu abaningi, i-psychosis eyenziwe ngizindlela — noma |

| Ibhodi | Kungani Lokhu Kuhlukile NgUhlobo, Hhayi Kuphepha Kwesimo |
|---|---|
| wokuziphatha kwama-psychosis, schizophrenia, noma i-bipolar disorder | ingokomkotela — iyaphuma ngokuzinikela lapho izinsuku kuya kwiweke. Ngale ndlela ethile, inkinga ihlukile kaningi: ukwenza isiqalo se-psychotic kumuntu onenkinga yokuqala kungakwenza iqiniso elingaliphi ngisho lapho umuthi usihamba, kuba... Inyembezi lingaba yinto eyasheshisa isifo esingabonakali kunokuba yinto eyisizathu esiyinhloko kwesimo esingaphandle. |

### *Kaniphi ukukhomba lokhu ngaphambi kokuba kuya kude kabili*

Ukuhlolwa kwazo zonke izibalo zokukhula (COMT rs4680, DRD2/ANKK1 Taq1A) yindlelela ehlakaniphile kakhulu yokwazi, kodwa akufiki kuwonke umuntu, futhi isihloko esisheshayo nesitholakala zaidi ukuhlolwa ngoluso bantu — lokhu kudinga ukubhekwa ngobunethemba, ngokuhle yiluphi, ngaphambi kokusebenzisa noma yini, noma kanjani okusheshayo ekukholweni kwesimo sokusebenza:

- Kukhona umlando wasemkhaya we-schizophrenia, i-bipolar disorder, noma umbiko wokungabonisani (psychotic episode) onoma yini—kuMama, uMdadisi, noma kuGogo/uGogo?
- Ube nezihloko zokuziphilisa ngokwakho, kuwophi umthombo ohlobene nalo, okuhlanganisa konke ukumbala noma i-cannabis, lapho engizizwa nje ngihlukile kakhulu kodwa ngiphakathi kwakungikwazi ukubambela ukuthi yini okuyiqiniso—akusona nje ukuba ngingathola isimo sokwesaba noma kokukhathazeka, kodwa ngingabiqiniseki ngokwenyaku ukuthi yini okwenzekayo kuwe?
- Ukhathazeka, ukhathazeka kakhulu, noma ukhokhakaza ngenxa yezindleko zokuqondiswa ezisemthethweni ngisho nangaphandle kwesimo sethu — umfanekiso weMet/Met 'Worrier' onikezwa esIbhizinisi 6 lapha?
- Izinhliziyo noma izimembo zokuziphatha (mood or psychotic-spectrum disorder) isithandwa yisihloko esingatholakala ubuqhawe bama-psychiatrist noma odokotela, ngisho noma akusilondolozi kakhulu noma ungabambeka nalo?

**⚠ ISIMEMBE**

Isimiso noma ukuhlonishwa okuthile lapho imibuzo yomlando womndeni noma yomuntu siqu kanye nemvakalisi we-Met/Met stimulant-sensitivity pattern iyatholakala kuwo, kuyadingeka kutshakashakweni njengokungayisabiwa kwemishingo yokuthi iqondile. Lokhu kuyindawo eyodwa kulolu holayo lonke lapho umyalezo uwukuthi 'nansi indlela yokunciphisa ukhathazekayo' — kuwukuthi 'lo mbhalo othize ohlangana ngalo uyisizathu sokuthi ukukhathazeka akukwenzeki ukunqoba ngokugcwele.' Uma lokhu kukhombisa wena noma umuntu owenza uzama ukusiza, ukubekwa kwesihloko somkhuba phambi kokusebenzisa okuthile — hhayi ngemuva komkhulu — kuyindawo elilungile elizayo, futhi yikho. Ngingathanda ukuzazi ingonyama yami yomkhawulo wokungabhekisani ngaphambi kokusebenzisa lokhu futhi.

### *Ukuchazwa Kwesizakala Ngaphandle Kwemiphumela Yomsebenzi*

- Izithuthi zikwenza ukuba uqaphele, ufokusi, futhi ubaphila ngendlela akukwenziwa yini into enye? → Ngokomqondo kaWarrior COMT ne-DRD2 elilungele.
- Usebenzise imithombo yokukhuthaza ngokukhethekile ukuze wenze—uzinze kaningi, isikhashana, uthola okuningi? → Ngokomqondo ku-Val/Val COMT.
- Uqale nge-stimulant elivela ku-prescription bese ukhulisa kusuka lapho? → Kungaba ukungabi yisimo se-DRD2 nokuphazamiseka kwalo.
- Ushaqeka futhi ne-depression noma ukungazihleka emehlweni akho ngisho lapho ungasebenzisi? → Kungaba yingozi ye-MTHFR — ukusekelwa kwe-methylation (5-MTHF) kubalulekile kunazo zonke izinto kuSection 8.

# Ibhizinisi lesigaba 7 — Ukusetsena Kwemibono Yokubala Izenzo

| Ithuluzi | Iprofa Yithile | Inhlawulo Yobuhlungu | Isizathu Esihlonishwa Sokuphihlela |
|---|---|---|---|
| Izingozi | Ukusebenzisa okungabonakali, okungenazo izinto eziningi; ukuthwala ngimehlobo noma ukufaka emehlweni okuhamba; ukusebenzisa phakathi kwezwe elilodwa lezama zamazwe | Kusheshisa—ukushaya kuyiqiniso kodwa ngokuvamile kusheshisa futhi kunombala omncane. | Ukungaphakathi kuyasizi ukukwenza ngokwakho kodwa umthwalo wokuzinikela udinga umuntu osiza ngoba kwenzeka ukushintsha kwezimo zokuzola. Izimpawu zokuphepha zeSifakari 0 sizihamba kaningi. |
| Ibhizinisi | Ukusetshenziswa okujwayelekile, akusizihambisana nezikhezi ezinkulu; izinyanga kuze kube imizuzwana emi-3 | Iqinisekisa ukuthi ukhuluma ngomunwezi wokuqala, futhi umemela ukuba ukhuluma ngezigaba zokudlula kwesigaba 2. | Ikhakhulukazi lokusekhusela kanye ne-Section 8 supplement stack kusukela usuku loku sinqoba kakhulu ukungciphisa ubuhlungu. |
| Iperiphi | Ukusebenzisa okungaphelele kweminyaka - izikhathi | Iperiphiwe — umfanekiso wokubanga ukushisa | Ukusisizwa kwezokwelapha ngesikhathi |

| Ithuluzi | Iprofa Yithile | Inhlawulo Yobuhlungu | Isizathu Esihlonishwa Sokuphihlela |
|---|---|---|---|
| | zokusebenza imihla eminingi kuze kube sekugcineni kukhathazekayo - iminyaka engapheliyo | (binge-crash) ngokwakhe kusheshisa ukulahlekelwa kwe-dopamine isimo esingaphezu kwakho okwenziwa ngokuqhubeka nokusebenzisa | sokudlula kabi kuqhuba kwemvulo kuyadingekayo, ikakhulukazi kubanga komkhawulo wokuzisola phakathi kwelzinsuku ezingu-1–5. Ungayiqondisi lokhu kahle. |
| Okuthize / indlela yeIV noma yokusithaka, emuva kwesikhathi eside | Iminye iminyaka kuze kube yizinyanga zokusebenzisa, ikakhulukazi ngokumthuku noma ngokuphotsa (ukugcwalisa komdopamina okusheshayo, okunamandla futhi okubekela isimo esijulile) | Okukhulu — lokhu yizilingo zabasebenzi abakubili-12 kuya ku-17 iminyaka lapho umnyaka wokubuyela kwe-D2 uboniswa eSikweni 3 | Ukutholakala kwempiyaca yempilo kanye nempilo yesithunzi phakathi kwezinto ezizinzile kakhulu kuqhuba okukhazimula. Lokhu kubhekwa futhi njalo abantu abezokuthola inani elikhulu mayelana nokubandakanyeka kwemthelela wokwelapha kunokuthi kube yindlela yokuziqakha ngokwazo. |

# Ibhizinisi lesi-8 — IProtokoli Yokubuyela Phakathi

**⚠ INGOLIMO**

Akukho lutho lapha oluthatha umqondo wokuzisola, i-psychosis, noma isimo esikhathini. Uma kukhona isinyathelo se-Section 0, lokulo sinamandla kunalokhu protokoli.

## Ikhalo elingu-1 — Ukusekelwa Komzimba

Izinto ezimbili eziyalandelayo zikhuluma ngqo ngehlanganisela le-glutamate kule ndlela yokubuyela, kanye ne-NAC — i-meth inemvukelo ye-dopamine eyenza ukuhlangana kwe-glutamate emizweni yama-cortico-striatal, futhi ukusebenza

okuningi kwe-NMDA receptor kusuka kuma-glutamate lokho kuyingxenye eqinile yokungcoliswa kwemvelo kuQalo 3, futhi ngokungenzeka kubuhlungu obukhulu, okusho ukuthi izikhalo ezingaboniswa njengokubuyela kwe-REM sleep lapho kusaphinde kukhona ukulala okweqiniso (Iqalo 4).

| Ukusekelwa | Indima |
|---|---|
| Ithiyosin (500-1000mg, ebusuku, kude neprotein) | Isiqalo sika-dopamine precursor — qala lapho ukandla ngokudla njalo, ngokuvamile Usuku lesi-3-5. |
| NAC (miligi emabili lapho ngizokudla) | Izenzo ezimbili: ukulawula i-glutamate kanye nokunciphisa ukuzifuna ngokusebenzisa isistimu yokuhambisana kwe-cystine-glutamate, NAGE umthombo we-glutathione osiza ekunqeni kwamafu emakhoneni — ukusebenzisa meth kuze kube phakade, ikakhulukazi lapho kuhlanganiswa namadakamizwa noma yini ekuphakathweni, kunika umthwalo omkhulu emindleleni yokunqoba amafu emakhoneni, futhi i-NAC inemiseko immolethi yesithuthi esiyinhloko semakhoneni. |
| NAD+ (nicotinamide adenine dinucleotide) | Ukusebenzisa izinto zokushisa ngokuzinzile kuphazamisa kakhulu i-NAD+, i-coenzyme ebalulekile ekukhiqizeni amandla wezimele kanye nokuqondisa i-DNA — ingxenye yokuqala ukubuyela kuyihlanganisa ukungaphakathi okukhulu. Ukusabalalisa nge-IV kuyindlela yokunikeza imandla enesizotha futhi eyaziwa kakhulu ukuze kube nokusizo ngokususa okukhona, lapho amaqhuba amaningi akhombisa ukunciphisa okubalulekile kokungaqondakali; izinto zokuthshaya nge-nose, ze-sublingual, kanye nezizathu zokuphakama (NMN/NR) ziyatholakala kakhulu kodwa angcono kunazo. Lokhu kuyindlela eqinile, akusona isidingo esiyinhloko — umsebenzi wokwakha lapha ngezansi (ukuphumula, ukulivela, ukudliwa) ukhokhela iningi elikhulu lokubuyela kwezimele; i-NAD+ kanye nezindlela ezithile zokunikeza imandla ziyizinto eyingenalo kodwa zingaba yikho. ukwengeza kancane phezu kwale ndlela, akusona uklinganisa nayo. |
| I-kalisi D-glucarate (200-400mg nge-usuku) | Isiqalo esilandela indima ye-NAC lapha eduze, esisebenza kuqhuba elihlukile lokulungisa iziphakathi zamafupho: sinyuka i-beta-glucuronidase, enzinza eyenza ukubuyekeza inqubo yokugawula yase-Phase II yasezinyanga futhi ihlale izinto eziyashicilelwa kanye nezimfundiso zamahormone zikubuyela emoyeni wokuhamba esikhundleni sokuhambiswa ngokufanele. Lapho i-NAC isiphakamisa indlela yokugawula ye-glutathione ngqo, i-calcium D-glucarate isiza ukuqinisekisa ukuthi lokho okusihlalo kusebenza yasezinyanga kuphuma kunokubuyela emoyeni — |

| Ukusekelwa | Indima |
|---|---|
| | ukusekelwa kwemfundo okubalulekile phakathi kwesikhathi lapho izinyanga ziqondsha botho isinto esithile kanye nezinto zonke ezazihlanganiswe nalo kulo mthombo. |
| Igi-magnesiethi elithi glycinate (i-300-400mg i-elemental, emini) | I-magnesi yihlala ngaphakathi kwesigaba se-NMDA futhi ihlamba ngokomzimba ukufaka okuningi kwe-calcium uma i-seluli ingaphezu kokuphazamiseka — iyalo yobunjabe yokulawula i-glutamate/NMDA okungaphakathi okuchazwayo lapha. Lokhu kuyahlanganiswa, hhayi esikhundeni sezinto, ngoyona ndima yakalo kuMkhawulo 8 yokusebenza kwezinyembezi ngaphansi. |
| I-pīridoksal-5-fosfeiti — i-iphakatsi lehlakaniphile le-B6, mg-20-50 ngemihla | IP5P iyisidingo esibalulekile somcofactor ye-glutamate decarboxylase (GAD), inenzimi eyenza i-glutamate ibe yaba. Ngaphandle kwesihlalo siqinisekile se-P5P, lokuguqula kuyahlukanisa, kuphakamisa kakhulu i-glutamate futhi kusiza ukuthi kube nge-GABA elincazayo — okubalulekile kakhulu kubizo elithi lisho ngombono onombala omkhulu we-glutamate. Usebenzise isaka se-P5P esihlanzekile kunokuba i-B6 (pyridoxine) standard uma kuphathelene ne-methylation, ngokwesigaba se-MTHFR lapha ngezansi. |
| I-“Brain Stack” — Uridine + DHA + CDP-Choline | Lihlalele ngokuchaphazela ukuthuthukiswa kwesanduku se-D2—ukubuyela kwezinto zokwakhiwa komhandzi we-dopamine ngokwazo, akusona nje ukulungisa izimpawu. |
| 5-MTHF (folate elilungisiwe) | Ukusekelwa kwesimethiwe esiyisisekelo engingayiqondsha, okubalulekile kakhulu uma imfanelo yokuphuma/ukuba yifihlele eMTHFR-linked kuQaga 6 iqhubeka. |
| Izitshalo kanye nokuluhlaza, ukudlela okungenziwe ngamanzi emithombo yamanzi ekhanyayo njengokudla okungaphezu kwesitshalo. | Lihlinzeka ngokuqoqa phakathi kwezinyathelo zokudlala eSicathweni 2; ukungcola komzimba kawo emva kokudla okuningi kuyiqiniso futhi kudingeka kuqashwe kanjalo njengezinye izimpawu zomsindo. |

### ⚠ ISIMEMO SOKUZIVIKELA

Ngokuthi i-ketamine ngokukhethekile, njengoba ivela ngendlela yalo kanye no-glutamate: kukhona ukuziqinisa kwemibono yokuziqonda nge-ketamine kubuhlungu bokusebenzisa izinto zikhiye (stimulant use disorder), esebenzisa ngokungcoliswa kwe-synaptic plasticity elihlobene ne-NMDA kunokuthi "kuphinda" ubunzima ngqo, njengoba yenza ngezenzo zakhe ekugcineni kwemvelo kokuphumula okungaphumeleli. Lolu daba lwezibonelo ezivela (Emerging-tier evidence), lisebenza kuphela ngokubekwa umbala othile, futhi lidinga ukugxila okukhulu kunokuthi kuqondishwe lapha ngokukhethekile — isiqalo sikawo sokungaqondi kwesimo se-Reward Deficiency Syndrome esihlanganiswe kuyo yonke iSekheji 6 esenza u-meth abe yinto ekhangayo kungakumbi kungaba yinto

eyenza umthwalo wezizotha (dissociative substance) abe yinto ekhangayo. Indlela yokusebenzisa iyathwala isiqalo esikhulu lapha: i-ketamine ye-IV ne-esketamine (Spravato, intranasal, ivumele ukusetshenziswa yi-FDA kubuhlungu bokuphepha okungaphumeleli — ukusetshenziswa okuqondile. uma kuhlahlelwa kubuhlungu bokusebenzisa izilawuli (stimulant use disorder) ngokukhexeza, inemvelo yokufinyelela eminingi kakhulu futhi eyizotheka kunokwetamina komlomo, okuhlanganisa i-troches — imindlela yomlomo iphatha umuthi omningi ku-first-pass liver metabolism, ikhiqiza umthelela ongenalo ukuqinisekiswa. Kalo sikhathi esilambulukile, esiqhubeka sikwalapha, imindlela yokugcina i-IV noma ye-intranasal ngokuvamile zibhekwa njengemkhawulo omkhulu kwinhlalakahle uma le ndlela ivame ukuziswa; ketamina komlomo ihlale ihlukaniswe njengokuthi ingaba yinketho yesigaba esisha, iseduze nokuba yimalanga angu-1 lapho ukulapha kwama-dopamine kanye ne-glutamate kuqala ngakumbi kwiSezione 3 kusukela. Lokhu kuyilimi lokuzivakazana kubhizinisi eliqondile nalo yizigugu zokusebenzisa izilawuli kanye nezifundo zika-ketamine, akusiyo ukwengeza ngokuzibhekana ku-stack lokhu.

## Ikhalo elibili — Ukusekelwa Komthetho Nokwehlakalo

- Akukho phophu eliqondile elilungele yizo mama ye-methamphetamine— ngabe ngathi kancane kuqoqo lwebenzo noma iSSRIs, le ndawo ihlala kubhekwa embonweni kanye nokusiza kunokuba isixhumanisi esisemthethweni.
- Ukuhlolwa komkhuba we-psychiatric ngesikhathi sokudlula umbunyane kuyanele uma ukungakhani kukhamba kakhulu, ngokuthi kubhekwa kwesikhalo esiqondile somthwalo wokuzisola ngemihlandıo kalzinsuku ezingu-1-5 — lokhu akusona ukugxeka okukhulu, kodwa ukubekezela okufanele ngokwezikhathi zokungaqondi ezivuthweni.
- Uma umphefumulo ulandela noma yisiphi sinyathelo somuthi (okulungile ukusebenzisa i-bupropion ngezinye izimo zokuhlukumeza imisebenzi yokuthuthukisa), khombisa isimo sika-CYP2D6/CYP2B6 uma siziqonda, ngokwesici 6.

### *Ikhodi elingu-2.5 — 'Umgqa Womoya': Ukunaka KwamaStimulant Okubhekwa NgUmphathi We-Psychiatrist*

Lokhu kufanele likuthola ukunakekelwa kwalo lokuqondile kunokuba yingxenye nje yesigaba esisodwa, ngoba kuyindlela yokusebenza eyiqhakazekile ekhonjiswa empiyaca yezempilo zama-addiction, futhi futhi kungenaka ukuyiqonda ngokuthi 'thola nje iseli lokuthatha umuthi ofanayo.' Akukona kanje, lapho kuzenziwa ngendlela efanele — kodwa ukuhlukaniswa kuyatholakala kakhulu ukuze kuthulwe kahle.

**⚠ ISIMEMO**

Lokhu akusinqubo esiqondisiwe. Kusadinga umphathi we-psychiatry noma umfundisi wezinye izinombala ezizivela empiyeni oziqhuba isinqumo, osihlola inkinga yokungasebenziswa ngokwehluko, futhi asikushakela njengelinzwa elingabuye — kodwa njengelinzwa lezokwelapha elilimele isikhathi. Ukuzama ukuthola imqiniso yombala we-

stimulant ngendlela engalungile, noma kuwehlisi olinganayo ongaqondsi ngokuthi ukhuluma ngezinye izinto, kuyinto ehlukile kakhulu futhi enesiko esikhulu kunokuthi kukhulunywa lapha eduze.

Izingqondo zokwelapha: izigaba zeGray kanye neSlow Return esigabeni 2 zinza ukungaqondweni kwemisebenzi yomkhondo okubonakala futhi kukhanyiswa ngokumbala, umemori wokusebenza, nokubanga imisebenzi — okungakwazi ukukhangisa i-ADHD, noma cha kube khona i-ADHD ngaphambi kokusebenzisa i-meth. Ezindaweni ezithile zokugcina izici (lokhu kukhona njengemsebenzi onqunywa emabhizinisi ombongi wezoba kwezinye izemisho, okubizwa ngezinye izikhathi ngokuthi ukuguqula i-psychostimulant noma ukusetshenziswa kwama-stabilization angenele), umstimulant okhathazekile, onamandla okuphakama — i-extended-release amphetamine salts (Adderall XR) noma okufana nalo — kusetshenziswa isikhathi esifushane ngokukhethekile ukuze kuqondise le ndalo yokusebenza yomkhondo lapho isistimu ye-dopamine esigabeni 3 isenza umsebenzi wayo wokuqondisa okusheshayo, kule njengendlela yokusebenzisa i-buprenorphine ukunaka uhlelo lwezinto elibhekene nokuphazamiseka kwe-opioid kunokuba libe ngaphakathi kwesimo sokubekezela ngokuzimelekeza ngokugcwele.

| Lokhu Kuyini | Lokhu Akukona |
|---|---|
| Ithuluzi elithi isikhathi esilandelayo, siqondishwa ngabahlali abasheshayo, esilandela ukungaqondi kwezimo zokusebenza (executive-function gap) kuMasinyetho 2 ezizihlanganisa iGray/Slow Return phases | Isibono esihle sokuzinakekela ngamagetsi anoma yini, ayikho noma ngokuthiwa kanjani. |
| Zisetshenziswa kanye ne, hhayi esikhundleni se-, umsebenzi we-Tier 1 kanye ne-Tier 3 kulo mqondo | Isiqalo esingashintsha umsebenzi wokuzivocavoca, ukulala, kanye nomsebenzi we-neuroplasticity okuhlela ukubuyela kwe-D2 receptor eSicathulo 3 |
| Iqinisekiswa ngombhalo futhi kuyinganiswa kakhulu kubenzi bozinzi—ingaphakathi yomlando womboniso: Ekuqala, akusiyoKwamukelekile | Isiqalo esisetshenzisiwe, isidingo sokuqala—izakhiwo eziningi zokuziphatha kwemithambisi zizishaye kancane kuphela, noma ngabe zisebenzisa kabili. |

## UKUZWA

Uma ukuhluleka nokungaqondile kwekusuka ekubekeni iqembu lokuqala kukuwenza ukhathazeke ukuthi ngabe unomsebenzi ka-ADHD noma owayenayo njalo — lokho kuyimibuzo engihlakaniphile yokumbuza umbhabili wezifundo, hhayi into yokubuyekezwa njengokuthi 'kukhuluma nje ukuhamba.' Ngezinye izikhathi kuwukuhamba. Ngezinye izikhathi i-ADHD eqinile, engaboniswayo ngaphambilini yayingaba yingxenye yokuwayenza imithombo ibe yimangaliso kancinci, ngokwezibuzo zokubeka umbala kweSection 6. Umfundisi angakusiza ukuchaza ukuhlukahluka, okuyinto eqondile eyayifanele iqhuba ngayo lo-"ghost scaffolding," hhayi ukuyihlanganisa.

### Isi-3 — Ukusekelwa Komthombo Womzimba Nokuthuthukiswa Kwemvelo (Isinyathelo Sokulungisa)

- Ukuzijukisa — yindletha ebaluleke kakhulu kulo mqondo onke. BDNF, isigqi sokulungisa ama-axons asemva kwama-dopamine anokubuhlungu okuchazwe kuGadololi 2 kanye noGadololi 3, lisibangiswa ngokuvamile ngemisebenzi yimzimba. Qala ngokusheshayo kuvele kuqiniso, noma ngabe isikhashana nje, futhi ukhulume ukuya kwi-minithi engama-30-45 emsebenzini wokugcwele kuya kwinzima ngezingalo eziningi.
- Ukulala — izashi ezingu-7-9, isikhathi esiqhubekayo; ukwakheka kwe-BDNF kanye nokuhlela idokhumento kusebenza kangqo ngesikhathi sokulala, okusho ukuthi ukulala okungaqondile kuqinisa kakhulu inqubo yokuqondisa eyaziwa eNg3.
- Ibhokisi lokukhanya lwesikhathi sokusuku — imizuzu engu-20 kuphileni ngaphandle, ngokuhle kakhulu phakathi kwezinyanga ezimbili zokuqala kokuba namandla, ukuze kuqondiswa ukusebenza komkhondo wezinsuku kanye nokusiza umphefumulo.
- Inemvumbo, inemthuba yokufunda yokuphazamiseka — iminyaka engu-30 kuya phambili yokuhlakanipha okunzima (isimanje, ulimi, ikakhono elikhethekile) iqhuba ukuzinza kwe-neuroplasticity kunokuba imisebenzi yobuhle.
- Ikhando leliqondile lezinsuku kanye nokubuyisisa kwamaqoqo omhobi—ukususa noma ukuguqula izinto ezihlobene nezindawo zokusebenzisa, abantu, kanye nezinto zokusebenza.

## Ibhiseke 9 — Ngomthwalo (Stigma)

Ithambothivha inoba umthwalo othize wokungathandwa kwezimo zokwenziwe kunazo izinto eziningi eziyihlanganiswe kulo mbhalo—uhlobo lwe-"tweaker," iziqalo zobugebengu noma ukungaphumeleli komoya, kanye nempilo yokungathandwa endlela umuthi nobenzisa wakhe abakhulunywa ngayo lapha emhlabeni okumangalisayo okungabonakali kancane njengokuba ubuthuku noma ukugxila kwe-opioid. Lokhu kudingeka likuchazwe ngokucacile kunokuthi libe yinto engabonakali, ngoba linemthelela kaqiniso, okhulunywa: abantu abanombala wokusebenzisa i-methamphetamine bayobeka—nenkinga yokuzivocela kwezethu zempilo, futhi ubuzelwa bombono bakuhlaliwe ukuthi bathola usalo olungcono kakhulu, ukunakekelwa komthwalo ongaphelele, kanye nokuba nokuphawula. emnyango wezombili abantu abanemihlazo yezinto ezingatholakala, noma lapho bekhonjiswa ngezinye izimpawu.

#### UKUZWA

Uma uzizwa njengoba kufanele ukuzilungiselele ngaphambi kokuthi utshele umphefumulo, udentisti, noma i-ER ukuthi kwenzeka kanjani—lo mqondo akusiyo ukwesaba. Kuyiphakathi okuhle kukawehluleka kuphatthi eqinile. Akusho ukuthi wonke umphakathi uzokubhekana nalo ngalo mqondo, futhi akusho ukuthi kufanele ubekezelelo ululu lwazi olikushika (ngokwesekwa kweSection 0 kanye neSection 5

yokuhlangana kwesiko esingasizayo, umlando oqinile ubalulekela ngokwakho) — kodwa ukugxeka okusithathe kulo mbhalo akusiyo ukuzibonakalisa okuphakama kukwahlukaniswe.

- Uma umthombo unombala oshintsha ngokubonakalayo lapho kukhulunywa ngokusetshenziswa kwe-methamphetamine, lokho kuyatholakala ukukuchazela ngqo kubo ('Ngifuna ukuqinisekisa ukuthi leli chazamazwi alishintshi ikhona kwesizotha somsebenzi onginithola lapha') noma, uma lokho aksebenzi, kuyatholakala ukusikhuluma kubothili bomthombo ohlukile — uvinelwe ukukwenza lokho.
- Abahlali abathize bemedicines yobulungiswa kanye nezikliniki ezihlonipha ukunciphisa ubuhlungu ngokuvamile bayihlala nokuba nezingalo zokubekwa kancane kunazo kwezindawo zokuphatha namanye amaqembu noma izimo zokutholwa kwemabhizinisi — kuqhathaniswa nokuqinisekela ukuthi kuzotholakala lapho umthwalo wokufunda khona.
- Isihluku sihlanganisa ngombala womuthi, akusona ngesizathu sakho ngokwezwi. Isimo sokubuyiswa kwesistimu ye-dopamine esichazwa eSahlukweni 3 asizibhekana nokuthi umuntu angacabanga ngani mayelana nesithunzi sakho lapho kuqala ukusebenza.

# Ibhizinisi lesi-10 — Ukukhomba Okukhazimulayo, Lisho futhi

**⚠ ISIMEMO**

Biza i-0800 567 567 noma i-112 ngokushesha uma: imiqondo yokuzisola noma isethi esithile, inhliziyo ingathandwa noma ukuhlupheka kwenhliziyo, isikhalo esikhulu esingenzeki noma izimpawu zokugula (ukuthule komthwalo womlomo, ukulahlekelwa komlomo, ukukhuluma okungaqondile), i-psychosis (imiqondo yokuzisola yomunye umuntu, imibono), noma ukuhlungwa okukhulu nokulahlekelwa kwokubhekisana. Ngemisho nje yezimpawu zokudlula — ukulalela, ukulala kakhulu, ukuphoba, ukufuna, ukungaqondi — lezi zingelindelekile ngokwesekukethulo 2, kodwa umthwalo wokusekelwa kanye, uma kunzima, ukuhlola onke usuku lapho noma esikoleni yezempilo noma ye-psychiatry kuzoba kuhle.

# Ibhizinisi lesigaba 11 — I-Map Yokubhekana Kwesigaba Esiphelele

| Isihloko | Okulokho Okukunikezwa Lapha |
|---|---|
| I-Kernel iMeth/Stimulant Guide, Ibhizinisi lesici-3 (IProtokoli Yokubuyisela Impilo) | Isikhathi esiphelele esithi Isihloko 2 seliqondishwa kuwo, kanye nokuqanganisa okuphelele kwezindleko zokunakekela namasikhathi emuva kwesihloko 8 i-Tier 1. |
| I-Kernel Kompendium, Isekhonto 16.4 (Ukuthuka Kwama-receptor — Ubufakazi) | Izibizo likaVolkow et al. kanye neHeinz et al. emuva kwesikhathi esithi ma-12-17 months kuQagatsha 3, kanye nezinye izibalo zokubuka ukophakama kwezimpawu zokuhlala komthwalo nomthwalo wekoko. |

| Isihloko | Okulokho Okukunikezwa Lapha |
|---|---|
| Ikhasi Lokuhlaziya le-Recovery Kernel, Iprokolthi 01 (Indawo Yokuhlala) | Ikhanganiso lokusindisa okuchazwa kubo phezu kwamaqembu ayeshona kanye nezingxenye zokugcina kweSection 2. |
| Ikhasi Lokuhlaziya i-Recovery Kernel, Iprokolthi 05 (Ukubakala Kwesimo Seziko) | Umsebenzi wokukhipha izinto zokukhuthaza kanye nokuguqula imiqondo yomkhuba okhulunywa kuMfundisi 8, Ibhizinisi lesithathu — ukwakha futhi gushintsha abantu, amaindawo, nezinto ezihlobene nomkhuba. |
| I-Kernel Kompendium, Protokoli 06 (Isakhiwo Esilawulwayo) | Ikhanganiso lokuziqhelanisa kwendlela yokusebenza okuhle kuyo kuqala ngokufanele phakathi kweweziwi lesibili kanye neziwi lesinekwamahlawulwa 2-4 esiqephathini 2, lapho ukubetha okukhulu kusebanga ukuthi kwaphelile. |
| Ikhomba le-Recovery Kernel, Iprokolthi 20 (Ukubuyisisa Isimo Somuntu), kanye ne-C-28 ('Ukuqondiswa Kabusha') | Kusukela emuva kwezinyanga ezi-1 kuze kube izinyanga ezithathu esiqephweni 2 — akusona ngaphambili. Ukwakha isimo kanye nezinye izindlela zokusebenza zakho, ezimangaliso futhi ezihle kakhulu, ezilungele umkhawulo we-Warrior COMT kuqephathu 6, kunokuba yisayizo esiqondishwa kubizo lomuthi noma ukungaphona kwakhe. |
| I-Kernel Kompendium, Ikhadi 16 (Ulwazi Lwe-neuroplasticity) | Ikhanganiso eliphelele le-90 iminyaka yokuqala okubuyakhiwa elibhekishwa kuGadololi 3 — imisebenzi, ukulala, ukufunda, kanye nezindlela zokukhanya ilanga ngokusobala, okuhlanganisa isakhiwo somphakathi emuva koGadololi 8 i-Tier 3. |
| Ibhuku Elandelayo le-Chemsex ye-Recovery Kernel | Uma ukusebenzisa i-methamphetamine kwenzeka emweni umkhawulweni we-chemsex ngokukhethekile — isikhathi sokubuyela kuphakathi kwe-GHB/meth/mephedrone kanye ne-supplement stack evunyelwe uhlaziya isithombe sombala samagama amaningi lokhu kukhomba kuphela i-meth. |
| I-Kernel Yokubuyisela Ubuhlungu Obukhulu Nokuxhumana Namasiko | Ngokwesihloko sikaqoqo esilo, Ibhizinisi lesi-3 (Isimo Somthwalo Nesimo Senhliziyo Esihlangene): ukuhlala nempilo yokuzibeka ngaphezu kwesidingo njalo okuguqulwa ekwenzeni izinto zokuthola isiqalo sokuphakama kwi-stimulant, lokhu kuyindlela yomthwalo eyaziwayo—kuyayona ukufunda kanye naloluqoqo uma le ndlela iyakuhlezi. |

# Igezi 12 — Ukuphetha

### SANCTUARY

Isimo se-dopamine esilithathwa yi-methamphetamine asishiyelwa ukuthi singaphakathi njalo. Izinye izibonelo zikhethekile futhi zingabonakala: ukubuyela okubonakalayo ngizinyanga, ukubuyela okukhulu kwezinto ezisemweni phakathi kwonyaka kuya kwinyanga emibili, kanye nokude okungumemphimisi we-90-usuku lapho umsebenzi

wokubeka izinto zikhiwe ngokuqondile ukuzijwayeza, ukulala, kanye nezinye izindlela zokuthola imiqondo yoba mnandi kunazo zonke izikhathi ezithile kuleli phrocesi. Ubuhlungu bokudlula kwakungeyona isinyathelo sokuthi okuthile kuphinde kube yinto engahambi kahle. Kwaba, futhi manje, isinyathelo sokuthi ukulungiswa kusale.

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**ISIPHELE SOKUDIVIKELA — IPROTOKOLI YOKUNQABELA: IMETHAMPHETAMINE**

*Isihloko Sezinsiza Zokulungisa Izimo — Akusizo Lomsiko — Akuyona Isiqalo Senhlalakahle Yempi*

*   **Izinto Okufanele Ukuzazi:**
*   *Lolu thuluzi luhlanganisa ulwazi, kodwa akusisho ukuthi kuyisixazululo somsebenzi wasombungela.*
*   *Ukuhlala ngalo kusho ukuthi kukhona izindlela zokubhekana nezimo, kodwa akukusho ukuthi kulungele noma yini isimo sakho.*

*   **Ukuphimisela:**
*   *Uma usizwa singenhlalakahle empi, **thola usizo lomsiko ngokushesha**.*
*   *Lolu thuluzi alikwazi uklinganisa noma ukubhekana nezimo zempilo ezinzima.*

*   **Izinto Ezibalulekile:**
*   *Ukuzibophelela kwakho kubaluleke kakhulu.*
*   *Uma udinga usizo oluqondile, chela umuntu othembekile noma iphasi yempilo.*

Crisis Resources: 988 (Suicide & Crisis Lifeline, call or text) | Crisis Text: HOME to 741741 | SAMHSA: 1-800-662-4357